

**Abstract**

An improved phase noise tracker comprising a first rotator, delayed second rotator and feedback loop coupled to the first and second rotators. The feedback loop further comprises a phase error detector and low-pass filter. The phase error detector estimates a phase error value of the first rotator's output, and the low-pass filter smooths out the output of the phase error detector by accumulating previous estimated phase error values from the phase error detector. The output of the feedback loop, from the low-pass filter's output, is fed back to a phase control input of the first rotator to control the phase rotation of the first rotator. The feedback loop's output is fed to a phase control input of the delayed second rotator to control its phase rotation. Therefore, the improved phase noise tracker tracks phase noise based on both previous and future phase error values, which more accurately corrects for phase noise.